What is claimed is:

1. A method for performing a one-step mask open process comprising:

forming a first layer on a substrate;

forming a second layer on said first layer;

forming a pattern in said second layer, wherein said pattern includes a feature in said second layer having a first critical dimension;

setting a target trim amount for reducing said first critical dimension to a second critical dimension;

determining a variable parameter for a process recipe using said target trim amount and a process model relating trim amount data to said variable parameter; and

transferring said pattern from said second layer to said first layer using said process recipe, while achieving said second critical dimension of said feature in said first layer.

2. The method of claim 1, wherein said setting said target trim amount includes determining a difference between said first critical dimension and said second critical dimension.

3. The method of claim 1, wherein said determining said variable parameter includes setting at an amount of a first process gas, an amount of a second process gas, a total amount of said first process gas and said second process gas, a chamber pressure, or at least one RF power, or any combination of two or more thereof.

4. The method of claim 3, wherein said determining said variable parameter includes setting a flow rate of CF_4, a flow rate of O_2, a chamber pressure, a RF power to an upper electrode, or a RF power to a lower electrode, or any combination of two or more thereof.

5. The method of claim 3, wherein said determining said variable parameter includes determining said amount of said first process gas from said process model, and determining said amount of said second process gas

from said amount of said first process gas and said total amount of said first process gas and said second process gas.

6. The method of claim 1, wherein said determining said variable parameter includes using a process model relating trim amount data (y) to said variable parameter (x) of the form $y = (x+a)/(bx+c)$, where a, b, and c are constants.

7. The method of claim 1, wherein said forming said first layer includes using a spin-on deposition and/or vapor deposition.

8. The method of claim 1, wherein said forming said first layer includes forming an organic layer.

9. The method of claim 1, wherein said forming said second layer includes using a spin-on deposition and/or vapor deposition.

10. The method of claim 1, wherein said forming said second layer includes forming a layer of light-sensitive material.

11. The method of claim 1, wherein said forming said pattern in said second layer includes using micro-lithography.

12. The method of claim 1, wherein said transferring said pattern from said second layer to said first layer includes using dry plasma etching according to said process recipe.

13. The method of claim 1, wherein said transferring said pattern form said second layer to said first layer is accomplished via longitudinal etching, and said achieving said second critical dimension from said first critical dimension is accomplished via lateral etching.

14. The method of claim 1, wherein said longitudinal etching and said lateral etching occurs simultaneously.

15. The method of claim 1, further comprising:

following said transfer of said pattern, measuring said second critical dimension of said second feature;

comparing said target trim amount with a difference between said first critical dimension and second critical dimension;

determining an offset from said comparison;

setting a new target trim amount for another substrate; and

adjusting said new target trim amount using said offset.

16. The method of claim 15, wherein said adjusting said new trim amount includes using a filter.

17. The method of claim 16, wherein said using said filter includes using a filter of the form $x_{new,a}=(1-\lambda)x_{new}+\lambda y$, where $x_{new,a}$ is the adjusted new trim amount, x_{new} is the new trim amount, λ is a filter constant and y is an offset.

18. A method of preparing a process model comprising:

defining a nominal process recipe for transferring a pattern having a first feature size from an overlying layer to an underlying layer on a substrate, wherein said nominal process recipe comprises at least one variable parameter and at least one constant parameter;

accumulating trim amount data as a function of said at least one variable parameter by measuring the trim amount for one or more values of said at least one variable parameter; and

curve-fitting said trim amount data as a function of said at least one variable parameter.

19. The method of claim 18, wherein said curve-fitting includes fitting said trim amount data as a function of said variable parameter with an expression of the form $y = (x+a)/(bx+c)$, where a, b, and c are constants, and where x is the at least one variable parameter and y is the trim amount.

20. An etching system comprising:

a process chamber;

a substrate holder coupled to said process chamber, and configured to support a substrate;

a plasma source coupled to said process chamber, and configured to form plasma in said process chamber;

a gas injection system coupled to said process chamber, and configured to introduce a process gas to said process chamber; and

a controller coupled to said process chamber, said substrate holder, said plasma source, or said gas injection system, or any combination of two or more thereof, and configured to execute a process recipe in order to transfer a pattern having a feature with a first critical dimension in an overlying layer to an underlying layer on said substrate, while reducing said first critical dimension to a second critical dimension by a target trim amount set by a process model.